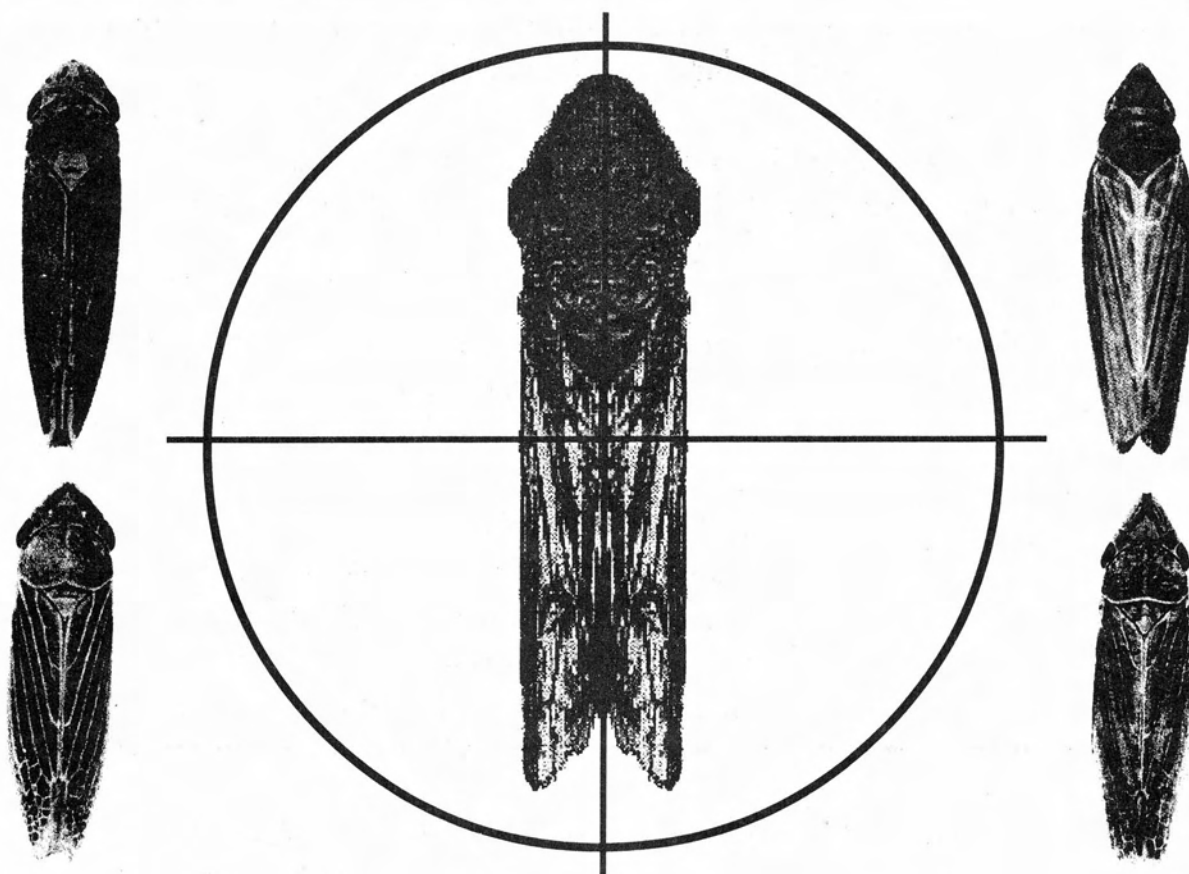


California Plant Pest & Disease Report

California Department of Food and Agriculture
Plant Pest Diagnostics Center
3294 Meadowview Road
Sacramento, CA 95832-1448



SHARPSHOOTERS: TAKING AIM

-See page 61 for details-

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Volume 18 Nos. 3-4,
June - September, 1999**

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*California Plant Pest
&
Disease Report*

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ENTOMOLOGY HIGHLIGHTS

Severe losses of winegrape vines in the Temecula area of Riverside County has prompted local growers to ask for financial assistance for research on the two responsible agents, the glassywinged sharpshooter and Pierce's Disease of grapes. Funds are being made available from federal and state governmental sources, as well as from industry and other private sources. Several articles on these two pests have already been published in past issues of CPPDR, but a special updated report is presented on pages 61-68.

SIGNIFICANT FINDS

MEDITERRANEAN FRUIT FLY, *Ceratitis capitata* -(A)- One male Mediterranean fruit fly was found within the Los Angeles Medfly Preventative release zone on August 23, 1999 in South Gate, **Los Angeles** County. The fly was found in a peach tree by Los Angeles County Department of Agriculture trapper Jesus Garcia and CDFA Identifier Husadee Pongprachakkul. Four sterile Medflies were also found in the trap. No additional Medflies were found.

GYPSY MOTH, *Lymantria dispar* -(A)- The following table represents gypsy moth detections over the summer. No infestations were found.

<u>County</u>	<u>City</u>	<u>Date Collected</u>	<u>Collector</u>
San Diego	Lakeside	07/20/99	Stevens
Los Angeles	Inglewood	07/22/99	Tutton
Nevada	Penn Valley	07/29/99	Knappen
Los Angeles	Downey	08/02/99	Alvarado
Nevada	Grass Valley	08/05/99	Sharman
Contra Costa	Concord/Clyde	08/06/99	Cervantes
Nevada	Grass Valley	08/09/99	Huntsinger
*San Mateo	Woodside	08/24/99	Bernardo
San Mateo	Woodside	08/25/99	Lee
San Diego	Fallbrook	08/31/99	Burquez
San Mateo	Montara	09/02/99	Vose

*3 males were found in one trap

ORIENTAL FRUIT FLY, *Bactrocera dorsalis* -(A)- Nineteen Oriental fruit flies were trapped between June and September, 1999. Three eradication projects were implemented in Los Angeles County in the areas of Sun Valley, Pico Rivera, and Westchester. See the chart on page 55 for additional trap information.

MEXICAN FRUIT FLY, *Anastrepha ludens* -(A)- Five Mexican fruit flies were trapped between June and September, 1999. An eradication project started in August as a result of a second fly find in Bloomington, San Bernardino County. See the chart on page 55 for additional trap information.

GUAVA FRUIT FLY, *Bactrocera correcta* -(A)- Four guava fruit flies were trapped between June and September, 1999. Eradication efforts began in Sacramento, Sacramento County after finding a second fly. See the chart on page 55 for additional trap information.

EUROPEAN CRANE FLY, *Tipula paludosa* -(A)- Adult crane flies have been found in Humboldt County after the initiation of a European crane fly (ECF) delimitation survey. Suspect ECF larvae was collected in April, 1999 [see CPPDR 18(1-2): 15-16] and was provisionally identified by CDFA Insect Biosystematist Eric Fisher as *Tipula paludosa*. Adult specimens needed to be examined before the identification could be considered absolute. Collections were made in September by CDFA Entomologist Mark Lubinski and Richard Spadoni of Humboldt County Agricultural Department.

AFRICANIZED HONEY BEE (AHB), *Apis* "Africanized" -(B)- Three swarms of AHB were reported between June and September, 1999. The AHB colonized area includes all of Imperial, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties, and portions of Kern and Ventura Counties.

<u>County</u>	<u>City</u>	<u>Date Collected</u>	<u>Collector</u>
San Bernardino	Lucerne Valley	07/06/99	SBC Vector Control
Los Angeles	Long Beach	08/31/99	Rush/Chai
Los Angeles	Long Beach	09/01/99	Hurley

JAPANESE BEETLE, *Popillia japonica* -(A)- Six single Japanese beetle collections were made from traps in the following locations. No infestations were found.

<u>County</u>	<u>City</u>	<u>Date Collected</u>	<u>Collector</u>
Los Angeles	Sun Valley	07/01/99	Hansen
Alameda	Oakland	07/14/99	Franke
Los Angeles	Los Angeles	07/15/99	Tran
Los Angeles	Downey	07/22/99	Harris
Santa Clara	Santa Clara	07/23/99	Jose
Santa Clara	San Jose	08/09/99	Jose

NEW COUNTY RECORDS

APPLE MAGGOT, *Rhagoletis pomonella* -(A)- Jim Crawford collected an apple maggot from a trap in San Jose, Santa Clara County on July 8. Apple maggot was also collected in Clarksburg, Yolo County on August 13. These are both new county records for apple maggot in the state.

ASCLEPIAS MEALYBUG, *Vryburgia trionymoides* -(Q)- Found at Temecula, Riverside County, on June 17, 1999 by Mike Lahti. It was originally found in California in Orange County on outdoor iceplant (*Mesembryanthemum edulis*) in 1994. There have been several scattered finds of this mealybug in recent years, mostly on succulents in the family Crassulaceae which were being grown indoors.

NEW COUNTY RECORDS, continued

LEMON GUM PSYLLID, *Cryptoneossa triangula* -(Q)- This psyllid was found for the first time in **San Bernardino** County in Rancho Cucamonga on July 23, 1999 where Janet Davey collected it from *Eucalyptus citriodora*. It is known from Orange and Santa Barbara Counties since 1995.

EUCALYPTUS PSYLLID, *Blastopsylla occidentalis* -(Q)- First found in California in 1983, this psyllid has been found in several new counties in conjunction with the surveys for redgum lerp psyllid. Collections were made in Olivehurst, **Yuba** County, on July 20, in Miller's Corner, **Madera** County, on July 23, and in Oildale, **Kern** County, on July 30, 1999.

GLASSYWINGED SHARPSHOOTER, *Homalodisca coagulata* -(C)- This leafhopper was found for the first time in **San Joaquin** County. A single individual was collected from an all purpose trap in an apple orchard on September 10, 1999 by county entomologist Larry Allen. Even after a diligent search, no other individuals were found. This collection may have been a carry in since a plant nursery is a short distance away. It is now established in the Arvin area of **Kern** County, and in the counties of San Diego, San Bernardino, Los Angeles, Riverside, Orange, Ventura, and Santa Barbara. See the special report on pages 61-68.

MINIMUS MEALYBUG, *Phenacoccus minimus* -(C)- This mealybug was collected by county biologist Peter Haggard in Orick, **Humboldt** County from sitka spruce on July 9, 1999. The only other collection of this mealybug in California dates back to 1901 when it was collected from the Salmon Mountains in Siskiyou County. It is known in the Rocky Mountains in Colorado, New Mexico, and in Canada.

REDGUM LERP PSYLLID, *Glycaspis brimblecombei* -(Q)- This psyllid was found in many new counties during the past several months. New county records were determined from **Amador, Calaveras, Glenn, Kern, Kings, Madera, Mariposa, Merced, Placer, Sacramento, San Benito, Santa Barbara, San Joaquin, San Luis Obispo, Santa Cruz, Solano, Stanislaus, Sutter, Tulare, Ventura, Yolo, and Yuba** counties. Please see the map on page 54 which shows the distribution of this pest in California. Dr. Don Dahlsten of the University of California at Berkeley was in Australia during August and has returned with potential natural enemies. Sacramento area infestations seem to have tapered off late in the season.

RED IMPORTED FIRE ANT, *Solenopsis invicta* -(A)- Red imported fire ant (RIFA) was found for the first time in **San Bernardino** County on July 28, 1999 when it was found in a residential neighborhood in Fontana. It has now been found in Fresno, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Stanislaus Counties. The California Department of Food and Agriculture is cooperating with the USDA, other states and local agencies to prevent the spread.

OLIVE FRUIT FLY, *Bactrocera oleae* -(A)- This fruit fly was trapped for the first time in several new counties. It was found in **Orange** County on June 29, **Ventura** County on July 12, **Santa Barbara** County on July 23, **San Diego** County on August 5, and **Tulare** County on September 14 (no subsequent finds have been made in Tulare County). See the charts on pages 56-60 for more information.

Current Distribution of the Red Gum Lerp Psyllid in California



Oriental Fruit Fly, *Bactrocera dorsalis* complex, -(A)- June-September, 1999 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	Sun Valley	07/15	5M	Jackson	apricot	Perez
Los Angeles	Burbank	07/22	1M	Jackson	orange	Perez
Los Angeles	North Hollywood	07/24	1M	Jackson	loquat	Pasillas
Los Angeles	Sun Valley	07/29	1F	McPhail	peach	Perez
San Bernardino	Ontario	08/11	1M	Jackson	ornamental	Clark
Los Angeles	Sun Valley	08/26	1M	Jackson	apple	Perez
Los Angeles	Sun Valley	08/31	1F	McPhail	grapefruit	Snyder
Los Angeles	Sun Valley	08/31	1F	McPhail	avocado	Snyder
Los Angeles	Santa Monica	08/31	1M	Jackson	ornamental	Rodriguez
Los Angeles	Westchester	08/31	1M	Jackson	avocado	Girgis
Los Angeles	Westchester	09/02	1M	Jackson	ornamental	Nuñez
Los Angeles	Sun Valley	09/07	1F	McPhail	grapefruit	Snyder
Los Angeles	Pico Rivera	09/09	1M	Jackson	lemon	Velazquez
Los Angeles	Pico Rivera	09/15	1M	Jackson	lemon	Gonzalez
Riverside	Riverside	09/27	1M	Jackson	persimmon	Huff

Mexican Fruit Fly, *Anastrepha ludens*, -(A)- June-September, 1999 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Santa Clara	San Jose	06/23	1F	McPhail	tangerine	Bauer
San Bernardino	Crestmore	08/20	1F	McPhail	peach	Cruz
Los Angeles	Downey	08/24	1M	McPhail	orange	Tsou
San Bernardino	Bloomington	08/26	1M	McPhail	sapote	O'Sullivan
San Bernardino	Bloomington	08/27	1M	McPhail	sapote	O'Sullivan

Guava Fruit Fly, *Bactrocera correcta*, -(A)- June-September, 1999 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Fresno	Fresno	06/23	1M	Jackson	apricot	Smith
Sacramento	Sacramento	08/18	1M	Jackson	loquat	Ramos
Sacramento	Sacramento	09/08	1M	Jackson	apple	Ramos
Los Angeles	Los Angeles	09/22	1M	Jackson	peach	Perez

Olive Fruit Fly, *Bactrocera oleae*, -(A)- June-September, 1999 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	Los Angeles	06/01	1F	Champ	olive	Moreno
Los Angeles	Palos Verdes Estates	06/01	1M	Champ	olive	Snyder
Los Angeles	Palos Verdes Estates	06/01	1F	Champ	olive	Snyder
Los Angeles	View Park	06/02	8M/2F	Champ	olive	Tsou
Los Angeles	Rancho Palos Verdes	06/02	1M	Champ	olive	Nuñez
Los Angeles	Miraleste	06/02	1M	Champ	olive	Baeza
Los Angeles	Redondo Beach	06/02	1M	Champ	olive	Vargas
Los Angeles	Brentwood	06/03	1M	Champ	olive	Baeza
Los Angeles	Los Angeles	06/04	1M	Champ	olive	Jones
Los Angeles	Rolling Hills Estates	06/04	1M	Champ	olive	Mendoza
Los Angeles	Miraleste	06/07	1M	Champ	olive	Rodriguez
Los Angeles	Rolling Hills Estates	06/07	1M	Champ	olive	Rodriguez
Los Angeles	Santa Monica	06/07	2M	Champ	olive	Snyder
Los Angeles	Sherman Oaks	06/07	1M	Champ	olive	Vega
Los Angeles	Los Feliz	06/06	1M/1F	Champ	olive	Jones
Los Angeles	Torrance	06/07	1M	Champ	olive	Rodriguez
Los Angeles	Torrance	06/08	1M	Champ	olive	Snyder
Los Angeles	West Los Angeles	06/08	1M	Champ	olive	Mendoza
Los Angeles	Claremont	06/09	1M	Champ	olive	Vega
Los Angeles	Rolling Hills Estates	06/10	1M	Champ	olive	Tsou
Los Angeles	Rolling Hills Estates	06/10	1M	Champ	olive	Tsou
Los Angeles	Rolling Hills Estates	06/10	1M	Champ	olive	Tsou
Los Angeles	Rolling Hills Estates	06/10	1M	Champ	olive	Tsou
Los Angeles	Palos Verdes	06/10	1M	Champ	olive	Moreno
Los Angeles	Rolling Hills Estates	06/10	1M	Champ	olive	Tsou
Los Angeles	Torrance	06/10	1M	Champ	olive	Jones
Los Angeles	Rolling Hills	06/10	1M	Champ	olive	Vela
Los Angeles	Ingleswood	06/10	1M	Champ	olive	Nuñez
Los Angeles	Palos Verdes	06/10	1F	Champ	olive	Vela
Los Angeles	Palos Verdes	06/10	1F	Champ	olive	Vela
Los Angeles	Rancho Palos Verdes	06/11	1M	Champ	olive	Bogaert
Los Angeles	Los Angeles	06/15	1M	McPhail	loquat	Perez
Ventura	Ventura	07/06	1M	Champ	olive	Jablonsky
Orange	Tustin	07/06	1M	Champ	olive	Diaz/Gailey
Orange	Newport Beach	07/13	1M	Champ	olive	Alvarez
Orange	Newport Beach	07/13	1M	Champ	olive	Alvarez
Orange	Garden Grove	07/15	1M	Champ	olive	Wilkinson

Olive Fruit Fly, *Bactrocera oleae*, -(A)- June-September, 1999 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	La Habra	07/20	1M	Champ	olive	Wilkinson/Diaz
Orange	Orange	07/20	1M	Champ	olive	Suriana/Diaz
Santa Barbara	Santa Barbara	07/23	1M	Champ	olive	Viramontes
Santa Barbara	Santa Barbara	07/23	1M	Champ	olive	Viramontes
Ventura	Oak Park	07/23	1M	Champ	olive	Montoya
Ventura	Newbury Park	07/26	1M	Champ	olive	Montoya
Ventura	Thousand Oaks	07/27	1F	Champ	olive	Montoya
Ventura	Oak Park	08/05	1F	Champ	olive	Montoya
San Diego	El Cajon	08/05	1F	Champ	olive	Montoya
Orange	Garden Grove	08/05	1M	Champ	olive	Culp/O'Sullivan
Orange	Garden Grove	08/05	1M	Champ	olive	Wilkinson
Orange	Irvine	08/05	1M	Champ	olive	Wilkinson
Orange	Orange	08/05	1M	Champ	olive	Rodriguez
Orange	Santa Barbara	08/05	1M/1F	Champ	olive	Jablonsky
Santa Barbara	Orange	08/05	1F	Champ	olive	Asakawa
Orange	Orange	08/06	1M	Champ	olive	Rodriguez
Orange	Santa Ana	08/09	1M	Champ	olive	Gailey/Brashear
Orange	Garden Grove	08/09	1M	Champ	olive	Wilkinson
San Diego	Jamul	08/11	1M	Champ	olive	Weddle/Liscano
San Diego	Santa Ana	08/12	1F	Champ	olive	Gailey/Brashear
Orange	San Clemente	08/13	1M	Champ	olive	Duran
Ventura	Thousand Oaks	08/17	1M	Champ	olive	Montoya
Ventura	Newbury Park	08/17	1M	Champ	olive	Montoya
Orange	Huntington Beach	08/18	1M	Champ	olive	Miramontes
Ventura	Thousand Oaks	08/18	1M	Champ	olive	Montoya
Ventura	Thousand Oaks	08/18	1M	Champ	olive	Montoya
Orange	Tustin	08/19	1M	Champ	olive	Diaz
Orange	Fullerton	08/19	1M	Champ	olive	Surtano
Santa Barbara	Santa Barbara	08/19	1M	Champ	olive	Viramontes
Santa Barbara	Santa Barbara	08/19	1F	Champ	olive	Viramontes
Orange	Garden Grove	08/23	1F	Champ	olive	Hernandez
Orange	Cypress	08/23	1M	Champ	olive	Hernandez
Orange	Cypress	08/23	1M	Champ	olive	Hernandez
Orange	Garden Grove	08/23	1M	Champ	olive	Hernandez
Orange	Garden Grove	08/23	1M	Champ	olive	Hernandez
Orange	Garden Grove	08/24	1M	Champ	olive	Rodriguez
Orange	Garden Grove	08/24	1M	Champ	olive	Rodriguez
Orange	Santa Ana	08/24	1M	Champ	olive	Hernandez

Olive Fruit Fly, *Bactrocera oleae*, -(A)- June-September, 1999 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Seal Beach	08/25	2M	Champ	olive	Miramontes
Orange	Anaheim	08/25	1M	Champ	olive	Gutierrez
Orange	Laguna Beach	08/25	1M	Champ	olive	Duran
Orange	Anaheim	08/25	1M	Champ	olive	Gutierrez
Orange	Rossmoor	08/25	1M	Champ	olive	Hernandez
Orange	Orange	08/25	2M	Champ	olive	Rodriguez
Orange	Seal Beach	08/26	2M	Champ	olive	Miramontes
Orange	Seal Beach	08/26	1M	Champ	olive	Miramontes
Orange	Seal Beach	08/26	3M	Champ	olive	Miramontes
Orange	Seal Beach	08/26	1M	Champ	olive	Rodriguez
Orange	Cypress	08/30	1M	Champ	olive	Gutierrez
Orange	Garden Grove	08/31	2F	Champ	olive	Miramontes
Orange	Westminster	09/01	1M	Champ	olive	Miramontes
Orange	Anaheim	09/01	1M	Champ	olive	Suriano
San Diego	La Mesa	09/02	1M	Champ	olive	Culp
San Diego	Chula Vista	09/03	1M	Champ	olive	Armendariz
Orange	Costa Mesa	09/03	2M	Champ	olive	Miramontes
Orange	Seal Beach	09/04	1F	Champ	olive	Miramontes
Orange	Villa Park	09/07	1M	Champ	olive	Suriano
Orange	Anaheim	09/07	1M	Champ	olive	Suriano
Orange	Buena Park	09/07	4M/2F	Champ	olive	Gutierrez
Orange	Garden Grove	09/07	1F	Champ	olive	Gutierrez
Orange	Tustin	09/07	2M/4F	Champ	olive	Suriano
Orange	Orange	09/07	2M/1F	Champ	olive	Suriano
Orange	Newport Beach	09/08	1M	Champ	olive	Alvarez
Orange	Costa Mesa	09/08	1M	Champ	olive	Alvarez
Santa Barbara	Santa Barbara	09/08	2M/3F	Champ	olive	Asakawa
Santa Barbara	Santa Barbara	09/08	1M	Champ	olive	Asakawa
Santa Barbara	Santa Barbara	09/08	2F	Champ	olive	Asakawa
Santa Barbara	Santa Barbara	09/08	1M	Champ	olive	Asakawa
Santa Barbara	Santa Barbara	09/08	1M	Champ	olive	Asakawa
Santa Barbara	Santa Barbara	09/08	1M	Champ	olive	Asakawa
Santa Barbara	Montecito	09/09	1M	Champ	olive	Viramontes
Orange	Dana Point	09/10	1M	Champ	olive	Duran
Orange	Santa Ana	09/10	1M	Champ	olive	Avalos
Orange	Anaheim	09/10	1M	Champ	olive	Avalos
Orange	Westminster	09/13	1M	Champ	olive	Hernandez
Orange	Westminster	09/13	1M/1F	Champ	olive	Hernandez

Olive Fruit Fly, *Bactrocera oleae*, -(A)- June-September, 1999 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Orange	09/13	1M	Champ	olive	Brashear
Orange	La Habra	09/13	4M	Champ	olive	Gutierrez
Orange	La Habra	09/13	1M	Champ	olive	Gutierrez
Tulare	Plainview	09/14	1M	Champ	olive	Alamo
Orange	Anaheim	09/14	12M/8F	Champ	olive	Suriano
Orange	Garden Grove	09/14	1M	Champ	olive	Miramontes
Orange	Yorba Linda	09/15	1M	Champ	olive	Suriano
Orange	Santa Ana	09/15	1M	Champ	olive	Miramontes
Orange	Stanton	09/16	1M	Champ	olive	Gutierrez
Orange	Anaheim	09/16	1M	Champ	olive	Gutierrez
Orange	Seal Beach	09/16	1F	Champ	olive	Miramontes
Orange	Seal Beach	09/16	1M/1F	Champ	olive	Miramontes
Ventura	Simi Valley	09/16	1M	Champ	olive	Montoya
Orange	Lake Forest	09/17	1M	Champ	olive	Alvarez
Ventura	Simi Valley	09/17	1M	Champ	olive	Montoya
Orange	Cypress	09/20	1F	Champ	olive	Hernandez
Orange	Westminster	09/20	1F	Champ	olive	Hernandez
Orange	Cypress	09/20	1F/1M	Champ	olive	Hernandez
Orange	Cypress	09/20	1F	Champ	olive	Hernandez
Orange	Stanton	09/20	1M	Champ	olive	Hernandez
Orange	Stanton	09/20	1M	Champ	olive	Hernandez
Orange	Garden Grove	09/20	11M/6F	Champ	olive	Casas
Orange	Garden Grove	09/20	1F	Champ	olive	Casas
Orange	Tustin	09/20	3M/1F	Champ	fig	Casas
Orange	Orange	09/20	1M/1F	Champ	olive	Casas
Orange	Tustin	09/20	2M	Champ	olive	Casas
Orange	Tustin	09/20	1F	Champ	olive	Casas
Orange	Rossmoor	09/20	1M	Champ	olive	Gutierrez
Orange	Rossmoor	09/20	1M/1F	Champ	olive	Gutierrez
Orange	Santa Ana	09/20	1F	Champ	olive	Gailey
Orange	Tustin	09/20	1M	Champ	olive	Casas
Orange	Portola Hill	09/21	1M	Champ	olive	Alvarez
Orange	Anaheim	09/21	4P	N/A	olive	Ruiz/Lopez
Orange	Laguna Beach	09/21	1F	Champ	olive	Duran
Orange	Huntington Beach	09/21	2M	Champ	olive	Miramontes
Orange	Los Alamitos	09/21	1F	Champ	olive	Gutierrez
Ventura	Thousand Oaks	09/22	1M	Champ	olive	Montoya

Olive Fruit Fly, *Bactrocera oleae*, -(A)- June-September, 1999 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Ventura	Thousand Oaks	09/22	1M	Champ	olive	Montoya
San Diego	San Diego	09/27	1F	Champ	olive	Paredes
Orange	Garden Grove	09/27	2M/1F	Champ	olive	Gutierrez
Orange	Garden Grove	09/27	1M	Champ	olive	Gutierrez
Orange	Stanton	09/27	1M	Champ	olive	Gutierrez
Orange	Garden Grove	09/27	4M/1F	Champ	olive	Gutierrez
Orange	Garden Grove	09/27	1M	Champ	olive	Gutierrez
Orange	Buena Park	09/28	6M	Champ	olive	Gutierrez
Orange	Buena Park	09/28	1M	Champ	olive	Gutierrez
Orange	Buena Park	09/28	1M	Champ	olive	Gutierrez
Orange	Buena Park	09/28	1M	Champ	olive	Gutierrez
Orange	Buena Park	09/28	1M	Champ	olive	Gutierrez
Orange	Brea	09/28	1F	Champ	olive	Suriano

SPECIAL REPORT

PIERCE'S DISEASE, THE GLASSY-WINGED SHARPSHOOTER, AND THEIR IMPACT ON CALIFORNIA GRAPE PRODUCTION

Two pests are currently causing severe economic losses to vineyards in southern California. One is a disease, the other is an insect. One is old, one is new. Pierce's disease of grapes is a bacterial disease that has caused severe losses at times throughout the grape growing areas of California and the southeastern states since the late 1800s, and has resulted in the abandonment of vineyards and the closing of numerous wineries in several regions of California, particularly southern California. Pierce's disease is caused by a xylem restricted microbe called *Xylella fastidiosa*. Severe debilitation and death of the vines result when the organism plugs up the xylem or water conducting tubes in the plant. The disease is thought to be transmitted to a lesser or greater degree by any of the xylem feeding insects, primarily the leafhopper subfamily Cicadellinae (the sharpshooters), the spittlebugs, and possibly other groups such as cicadas. Most other leafhoppers not in the subfamily Cicadellinae are xylem feeders and do not transmit the disease.

The disease recently has become problematic in the wine grape growing area of Temecula, in Riverside County. The reason for an apparent serious and sudden outbreak of the disease is due to the presence of the glassy-winged sharpshooter, *Homalodisca coagulata*, occurring in large numbers in the vineyards of this area. Apparently, the sharpshooters are picking up the disease and spreading it rapidly throughout the vineyards, a pattern of disease dispersal that is very atypical of the pattern of Pierce's disease spread in California in the past.

The glassy-winged sharpshooter is relatively new in California, being first reported in California in 1994 with specimens collected from *Eucalyptus* spp. by UC Extension Specialist Phil Phillips from sites in Ventura, Ventura County [see CPPDR 13(1-2):8,10-11]. After further investigation this pest was also found to be established in Fontana, San Bernardino County, and in the Anaheim, Orange County area, where it apparently has existed since about 1990.

The following description of glassy-winged sharpshooter is taken from Nielson (1968):

"This pest is a very large, robust species. The male is 11.50 -12.50 mm in length while the female is between 11.80-13.80 mm. The general color is brown to black. The crown, pronotum, and scutellum are brown or black with numerous ivory or yellowish spots. The surface is coarsely rugulose and the elytra subhyaline.

It is prevalent in the Southeastern United States, but has been taken from Wisconsin and northern Mexico (Young, 1958). Turner and Pollard (1959) recorded it from Florida, Georgia, North Carolina, South Carolina, Mississippi, Alabama, Texas, Missouri, and Arkansas.

Turner and Pollard (1959a) also reported on the biology of this species. In their life-history studies the authors listed 73 species of plants in 35 families that supported populations of this insect. Favored herbaceous hosts were sunflower, hollyhock, okra, lambsquarters,

cotton, corn, and cowpeas. Oak, ash, silktree, crapemyrtle, and peach were favorite woody hosts. Nymphs of the first and second instar did not survive well on woody plants. Adults and older nymphs preferred feeding on stems and twigs rather than leaves of plants. It was a solitary feeder, but occasionally large populations were observed on a single plant. The species overwintered as adults in wooded areas. In the spring, adults gradually migrated to new hosts until populations built up in March and April. Eggs were laid in April in leaves of herbaceous plants or sometimes in leaves of woody plants. They were laid in clusters in the lower epidermal layer of leaves. In the summer, populations fed on herbaceous plants and occasionally congregated in large numbers on weakened peach trees. After summer hosts dried up, the insects moved to woody hosts during August, September, and October, at which time populations were greatest in peach orchards. In insectary studies, females mated only once. Eggs hatched in 12 days. The nymphal stage averaged 59.5 days in the first generation. The second generation was carried to the fourth instar, which was completed in 33.5 days. In the third generation, the nymphal stage was completed in 72.2 days. Adult longevity averages between 60 and 64 days among generations. There appeared to be two complete generations and a partial third annually.

Pollard and Kaloostian (1961) observed the overwintering habits of large populations on oak. During cold snaps the insects dropped to the ground overnight, then gradually returned to oak to feed as the temperature rose during the day."

There are a number of sharpshooters occurring naturally in California that have been proven vectors of Pierce's disease. One of the species likely but not proven as a vector of PD is actually very closely related to and in the same genus as the glassywinged sharpshooter. This is the smoketree sharpshooter, *Homalodisca lacerta*. It is a species native to the Sonoran Desert region of California, Arizona and northwestern Mexico. It had been commonly encountered primarily in the Coachella and Imperial Valleys of southeastern California, although in recent years it has established itself in the coastal areas of San Diego, Orange and Los Angeles Counties. Based on collection data from diseased oleanders in the Coachella Valley, the smoketree sharpshooter may be an important vector of oleander scorch there, a disease also caused by a strain of *Xylella fastidiosa*. The vector that was probably the most responsible for the transmission of Pierce's Disease throughout California previously and presently in Central and Northern California is the bluegreen sharpshooter, *Graphocephala atropunctata*. Other important vectors include the green sharpshooter, *Draeculacephala minerva*, and the red-headed sharpshooter, *Carneocephala fulgida* (other closely related species of *Graphocephala*, *Carneocephala* and *Draeculacephala* could be included). Other vectors not yet cited, that have been proven vectors of Pierce's Disease occurring in California, in nearby areas, or in the southeast include the following: (sharpshooters) *Carneocephala flaviceps*, *Carneocephala triguttata*, *Carneocephala fulgida*, *Cuerna costalis*, *Cuerna occidentalis*, *Cuerna yuccae*, *Draeculacephala crassicornis*, *Draeculacephala minerva*, *Draeculacephala noveboracensis*, *Draeculacephala portola portola*, *Friscanus friscanus*, *Graphocephala cythura*, *Graphocephala atropunctata* (formerly known as *Hordnia circellata*), *Graphocephala versuta*, *Helochara communis*, *Homalodisca coagulata*, *Homalodisca lacerta*, *Graphocephala confluens*, *Graphocephala dolobrata*, *Amphigonalia severini*, *Oncometopia orbona*, *Pagaronia confusa*, *Pagaronia furcata*, *Pagaronia tredecimpunctata*, *Pagaronia triunata*, (spittlebugs) *Philaenus spumarius*, *Clastroptera brunnea*, *Amphorophora permutata*, *Amphorophora angulata*.

The glassy-winged sharpshooter is quite large as leafhoppers go, although much larger species occur in tropical America. It is about 1/2 inch long, and the smoketree sharpshooter is slightly smaller. The bluegreen sharpshooter, previously the most important vector of PD in California, is about 1/4 inch long, as are most of the other California sharpshooter vectors. Positive identification of the sharpshooters, as in most leafhopper groups, requires dissection of the male reproductive structures, and should be done by a leafhopper specialist. However, many of the species have useful color patterns, particularly on the head and prothorax, that in many cases will allow fairly accurate field identifications. These patterns for most of the vectors are shown on pages 65-66, as well as full length illustrations of most of the common vectors on page 67(Fig.1 A-J).

The glassy-winged sharpshooter is a vector of rickettsia-like organisms (RLOs), phony peach disease and Pierce's disease of grape in Georgia. Transmission of phony peach disease was first reported by Turner and Pollard (1955) under the name of "*Homalodisca triquetra* (Fabricius)." Eight definite and eight probable cases of transmission were obtained in 203 trees tested. Other sharpshooter vectored diseases include alfalfa dwarf, oleander scorch, almond scorch, etc. Kaloostian et al. (1962) were first to confirm this species as a vector of Pierce's disease of grape in Georgia. Earlier Crall and Stover (1957) obtained transmission, but they were unable to determine whether they were using *Homalodisca triquetra*, or *H. insolita*, or both species in their tests (this was *coagulata* since neither *triquetra* or *insolita* occur in the southeast).

This leafhopper is readily separated from its near relative, *Homalodisca lacerta*, the smoke tree sharpshooter, by the lack of well defined, bright yellow cephalic vermiculations that are found in *lacerta*. Also, the male aedeagus of *lacerta* lacks the extra ventral lateral projections that are found in *coagulata* (see illustrations in CPPDR 13(1-2):11. There are 19 species in this genus. Most occur in Mexico, Central America and northern South America. Five species are recorded from the U.S.

A task force has been formed with an initial focus on the development of research priorities for the insect and the disease. Research objectives will be developed relevant to the following subject areas:

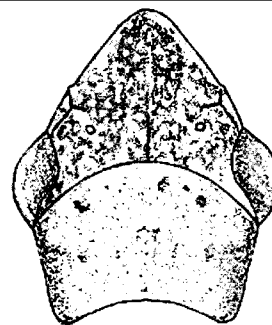
- Distribution and population
- Monitoring and database management
- Biology and ecology of the organisms
- Biological control of GWSS
- Use of pesticides to control GWSS and limit spread of disease
- Barriers and trap crops
- Chemotherapy for PD in grape using antibiotic and other treatments
- Biological control of PD/Epidemiology of PD
- Movement/Spread/Monitoring methods and pathology of PD in plants
- Cultivars of grape resistant to PD
- Economic analysis

References:

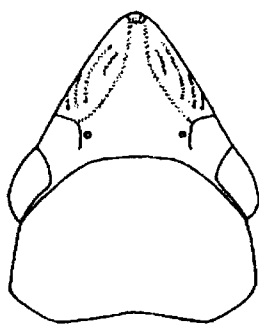
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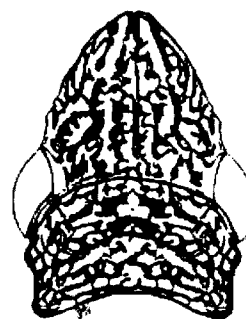
Graphocephala atropunctata
blue-green sharpshooter



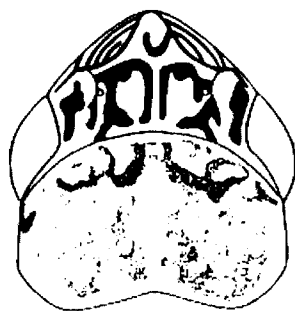
Homalodisca coagulata
glassy winged sharpshooter



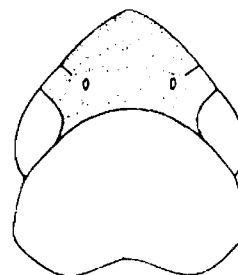
Draeculacephala minerva
green sharpshooter



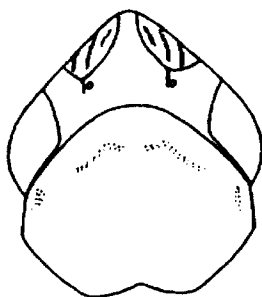
Homalodisca lacerta
smoketree sharpshooter



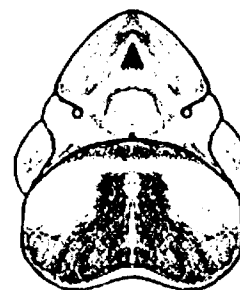
Graphocephala confluens
willow sharpshooter



Carneiocephala fulgida
red headed sharpshooter

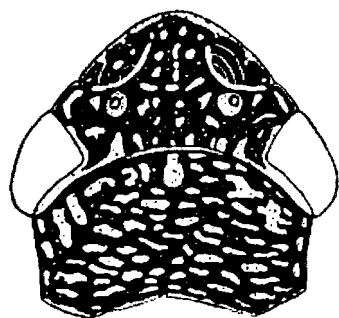


Helochara communis
bog sharpshooter

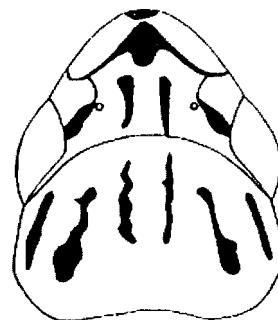


Carneiocephala triguttata
triangular spot sharpshooter

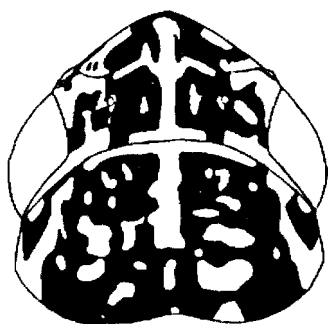
Fig.1 Head and thorax of Pierce's Disease vectors (sharpshooters).



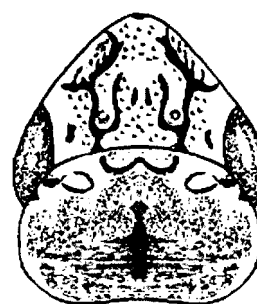
Cuerna occidentalis
occidental sharpshooter



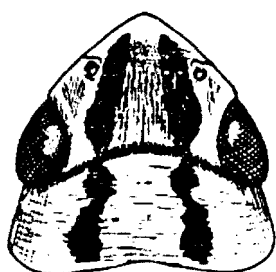
Graphocephala cythura
cythurate sharpshooter



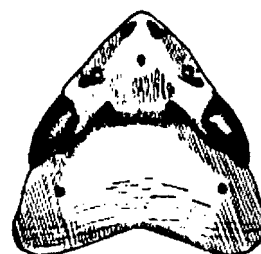
Graphocephala hieroglyphica
purple sharpshooter



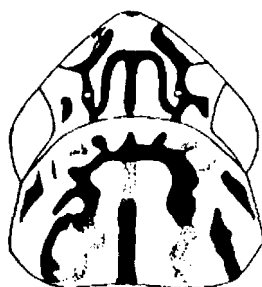
Amphigonalia bispinosa



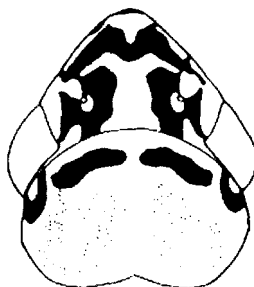
Friscanus friscanus
lupine sharpshooter



Pagaronia tredecimpunctata
conical-headed sharpshooter



Amphigonalia gothica
Severin's sharpshooter



Graphocephala minuenda



Amphigonalia aridella

Fig.2 Head and thorax of Pierce's Disease vectors (sharpshooters).

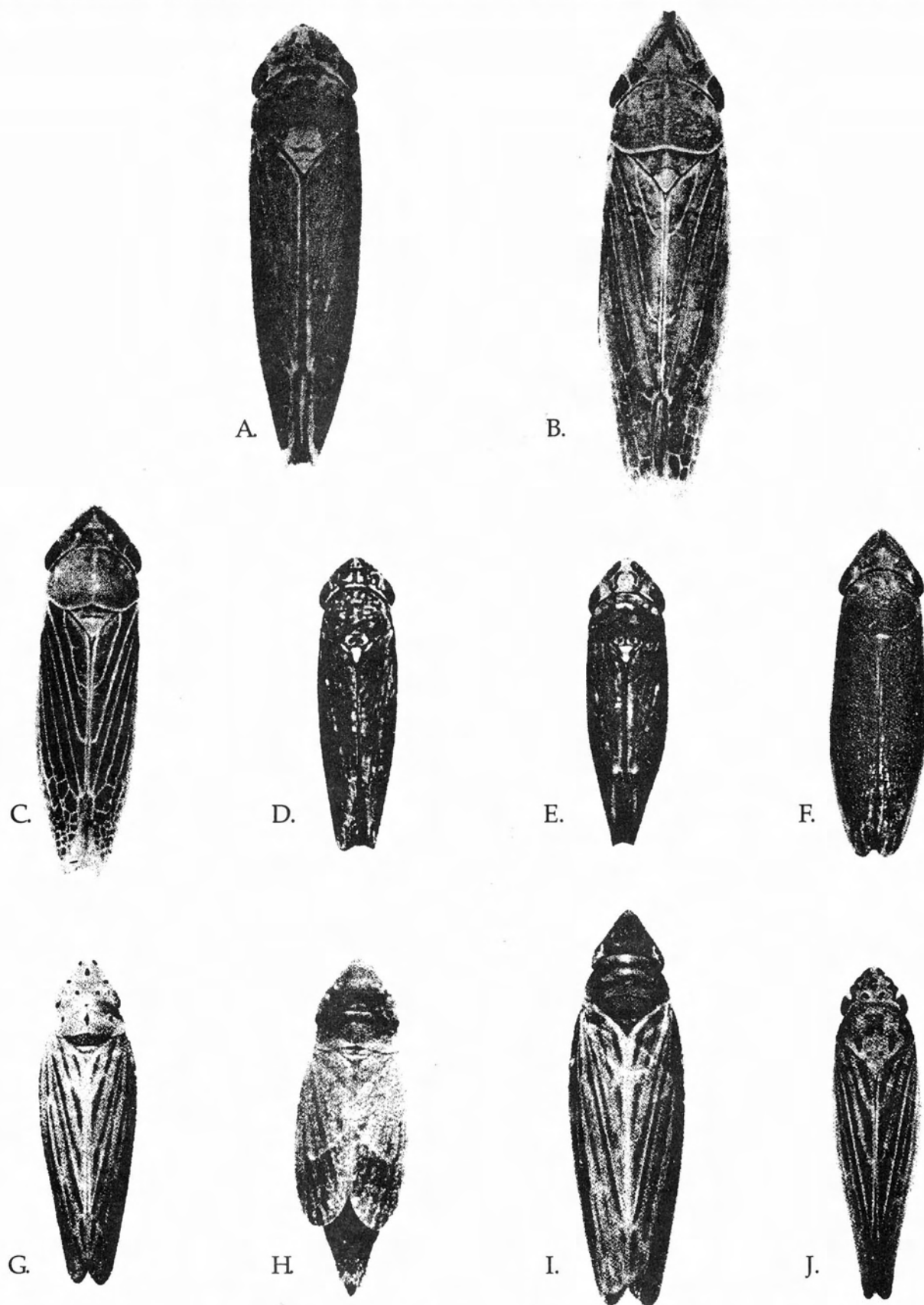


Fig. 3 A) blue-green sharpshooter, B) green sharpshooter, C) redheaded sharpshooter, D) willow sharpshooter, E) *Amphigonalia severini*, F) *Helochara delta*, G) *Pagaronia 13-punctata*, H) *Friscanus friscanus*, I) *Pagaronia confusa*, J) *Pagaronia triunata*.

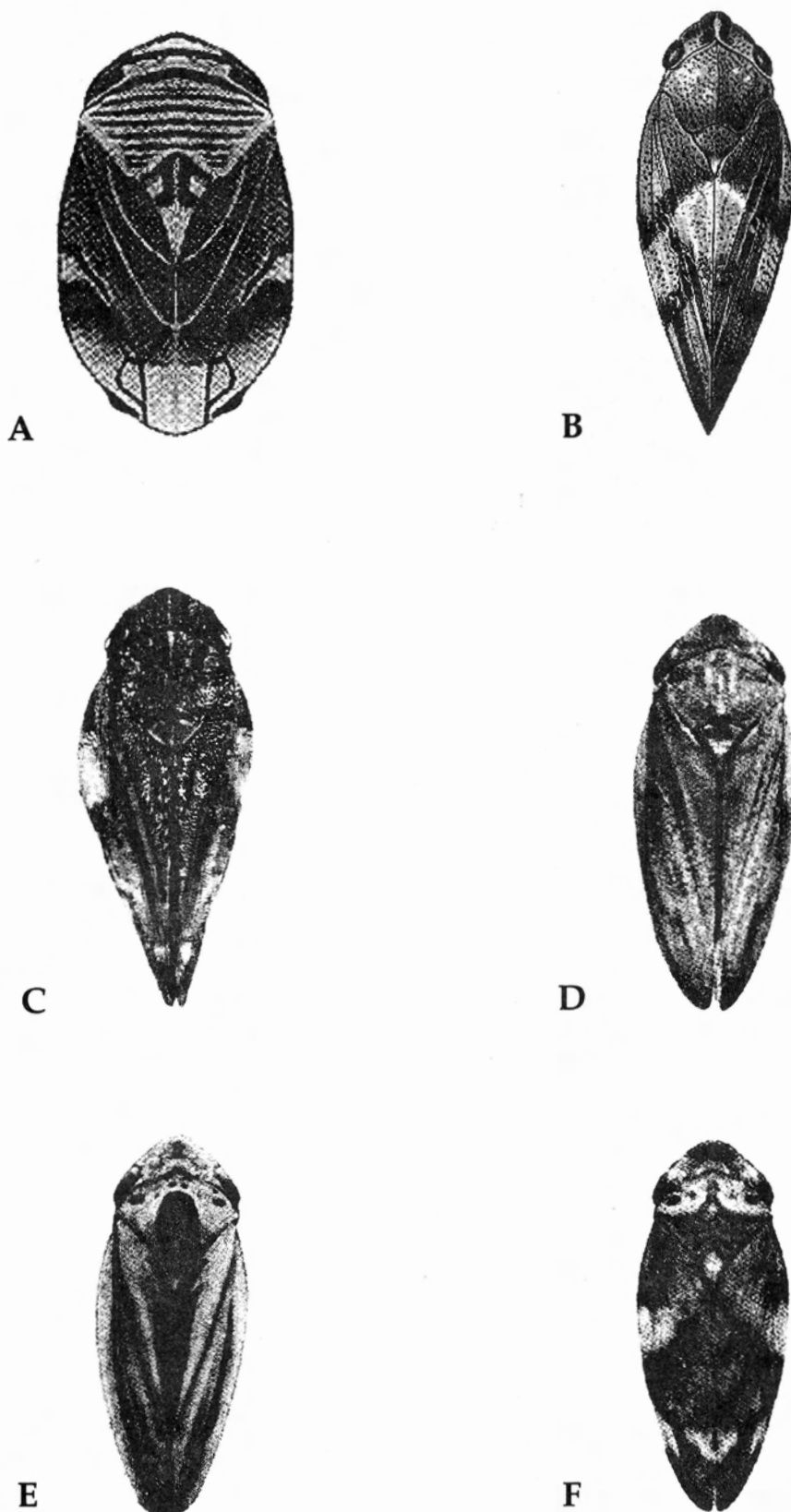


Fig. 4 Genera of spittlebugs known to cause Pierce's Disease. A) *Clastoptera brunnea*. B) *Aphrophera permutata*. C) *Aphrophera angulata*. D, E, F) color forms of *Philaenus spumarius*.

NEW STATE RECORDS

PINK HIBISCUS MEALYBUG, *Maconellicoccus hirsutus* -(A)- This mealybug has been found for the first time outside of quarantine in California. The first record of this pest was a collection on August 25, 1999 from mulberry in El Centro, Imperial County by Imperial County Entomologist Dick Weddle. This also represents a new continental U.S. record.

Further survey discovered it in the towns of Imperial, Seeley, Heber, and Calexico, and the city of Mexicali, State of Baja California, Mexico. Upon survey of all of Imperial County, no other sites were found and nothing has been found in production agriculture.

The following information from USDA Program Aid No. 1606 explains the economic importance of this mealybug:

The pink hibiscus mealybug (PHM) is a serious new threat to U.S. agriculture. It attacks more than 200 plants, including beans, chrysanthemum, citrus, coconut, coffee, cotton, corn, croton, cucumber, grape, guava, hibiscus, peanuts, pumpkin, rose, and mulberry. This pest is established in central and northern Africa, India, Pakistan, northern Australia, and southeastern Asia. It has recently arrived in tropical areas in the Western Hemisphere.

Since it arrived in Grenada in 1994, the PHM has spread to Guyana in South America and at least 14 other Caribbean islands: St. Thomas, St. John, and St. Croix in the U.S. Virgin Islands; and in St. Martin, St. Eustatius, St. Kitts, Nevis, Anguilla, Antigua, Ste. Lucia, St. Vincent, and Trinidad and Tobago. Heavy cottonlike, white, waxy buildup on the terminals, stems, and branches of the infested host plants may indicate a severe mealybug infestation.

Identification: The adult female is about 3 mm long and wingless with white, flocculent wax covering the dorsal surface. It has two short, inconspicuous caudal filaments and no lateral wax filaments. The female's body and body fluid are both reddish. The female secretes a white cottonlike egg mass, irregular in shape, and lays from 300 to 600 pink eggs inside. First instar nymphs, or pink crawlers, emerge from the eggs. When the egg mass is teased open, the pink eggs and crawlers are exposed and easily seen. In tropical climates, it takes about 30 days to complete one generation.

Damage: The PHM sucks juices from its host plant and injects a toxic saliva as it feeds. This process leads to the malformation of leaves and fruit, as well as stunted leaves and terminal growth, which is commonly called "bunchy top". This mealybug's feeding can also lead directly to the death of its host. Economic losses exceed \$3.5 million a year in Trinidad and Tobago.

A USDA new pest advisory group evaluated this pest and determined that biological control is the best long-term strategy. Since it spreads easily by natural means, quarantine measures are of limited, short-term value. Biological control agents have been released in all of the infested residential areas in Imperial County and Mexicali. Survey is in progress in other areas of California with particular emphasis on those Southern California counties adjacent to Imperial County.

EXCLUSION

Several pest species are collected every year on incoming or newly arrived nursery stock or other similar quarantine situations that are not considered to be established in the state. The following are examples of such rated pests found between June and September. For additional information on significant quarantine interceptions, see pages 71-72.

RED WAX SCALE, *Ceroplastes rubens* -(A)- Found on mango at a nursery in Vista, **San Diego** County by Davy on June 1, 1999.

GREEN SCALE, *Coccus viridis* -(A)- This scale was also found at a nursery in Vista, **San Diego** County on June 3, 1999 by Terhall.

Important "A", "B", and "Q" Rated Arthropods and Mollusks Intercepted in Quarantine through September 1999

Rating	Species	Common Name	Date	Origin	County	Host	Collector(s)
Q	<i>Cerataphis</i> sp.	an aphid	03/04/99	Hawaii	RIV	cut leaves	Lomeli
Q	<i>Hypothenemus eruditus</i>	a bark beetle	03/24/99		LAX	Lindgren funnel	Arroyo
Q	<i>Parlatoria ziziphi</i>	black citrus scale	03/24/99	Thailand	HUM	<i>Citrus hystrix</i>	Spadoni
Q	<i>Pinnaspis uniloba</i>	unilobed scale	03/25/99	Hawaii	HUM	orchid	Humphreys
Q	<i>Hypothenemus eruditus</i>	a bark beetle			LAX	Lindgren funnel	Arroyo
Q	<i>Fiorinia</i> sp.	an armored scale	03/24/99	Thailand	HUM	<i>Citrus hystrix</i>	Spadoni
Q	<i>Parlatoria ziziphi</i>	black citrus scale	03/24/99	Thailand	HUM	<i>Citrus hystrix</i>	Spadoni
Q	<i>Sybra alternans</i>	a longhorned beetle	03/01/99	Hawaii	LAX	herbs	Chinwah
Q	<i>Thysanofiorinia nephelii</i>	longan scale	04/27/99	Asia	ALA	<i>Euphoria longan</i>	Eaton
Q	<i>Rhizococcus hibisci</i>	root mealybug	03/04/99	Hawaii	LAX	palms	Ruse
A	<i>Coccus viridis</i>	green scale	03/05/99	Hawaii	SCL	<i>Nephelium lappaceum</i>	Irons
B	<i>Pseudococcus elisae</i>	Elisa mealybug	03/23/99	Hawaii	SMT	<i>Zingiber</i> sp.	Simon
Q	<i>Unaspis yanonensis</i>	arrowhead scale	04/12/99	China	LAX	<i>Citrus</i> sp.	Hoffman
Q	<i>Tarsonemus</i> sp.	a tarsonemid mite	03/30/99	Ecuador/Colombia	RIV	<i>Dianthus</i> sp.	Lahti
Q	<i>Thrips orientalis</i>	a thrips	04/28/99	Hawaii	ALA	Lei	Roache
Q	<i>Rhizococcus hibisci</i>	a root mealybug	04/08/99	Florida	LAX	<i>Phoenix</i> sp.	Cartana
Q	<i>Rhizococcus hibisci</i>	a root mealybug	04/05/99	Florida	LAX	<i>Phoenix roebelenii</i>	Wagner
Q	<i>Scleroscoccus tillandsiae</i>	a bromeliad pit scale	03/30/99		MAD	<i>Tillandsia</i> sp.	Shima
Q	<i>Sophonia rufofascia</i>	a leafhopper	04/13/99	Hawaii	RIV	cut foliage	Vanderhorst
Q	<i>Pseudococcus swezeyi</i>	Swezey's mealybug	04/02/99	Hawaii	ORA	<i>Cordyline terminalis</i>	Chandler
Q	<i>Philephedra tuberculosa</i>	a soft scale	04/14/99	Florida	ORA	<i>Spathiphyllum</i> sp.	Kinsella
A	<i>Morganella longispina</i>	plumose scale	04/07/99	Florida	ORA	<i>Ficus benjamina</i>	Fernandez
A	<i>Hemiberlesia palmuae</i>	tropical palm scale	04/20/99		MINT	<i>Strelitzia</i> sp.	Olmsted
A	<i>Howardia biclavus</i>	mining scale	04/20/99		ORA	<i>Ficus benjamina</i>	Fernandez
A	<i>Howardia biclavus</i>	mining scale	04/09/99	South Carolina	ORA	<i>Manilkara zapota</i>	Nestor
Q	<i>Coccus acutissimus</i>	slender soft scale	04/23/99		LAX	<i>Euphoria longan</i>	Burton
A	<i>Diastrophus</i> sp.	a gall wasp	04/06/99	Illinois	BUT	<i>Rubus</i> sp.	Pejsa
Q	<i>Dysmicoccus mackenziei</i>	Mackenzie mealybug	03/31/99		MAD	<i>Tillandsia filifolia</i>	Brar
B	<i>Aracercus coffeae</i>	coffee bean weevil		Hawaii	LAX	malonguy	Marashi
Q	<i>Aceria litchii</i>	an eriophyid mite	04/03/99	Hawaii	RIV	<i>Litchi chinensis</i>	Chandler
Q	<i>Aleurotulus anthuricola</i>	anthurium whitefly	04/14/99	Hawaii	RIV	<i>Anthurium</i> sp.	Chandler
Q	<i>Tolyte velleda</i>	lappet moth	04/12/99	Florida	SAC	cut tree fern	Bianchi
Q	<i>Coccus viridis</i>	green scale	04/21/99	Hawaii	RIV	<i>Zingiber</i> sp.	Chandler
B	<i>Ferrisia virgata</i>	striped mealybug	04/16/99	Costa Rica	SJQ	<i>Dracaena marginata</i>	Lanchester
A	<i>Adoretus sinicus</i>	Chinese rose beetle	04/06/99	Hawaii	SMT	Ngigia (fresh herb)	Simon

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A	<i>Adoretus sinicus</i>	Chinese rose beetle	04/06/99	Hawaii	SMT	Ngigai	Simon
B	<i>Siphanta acuta</i>	torpedo bug	04/01/99	Hawaii	SCL	cut flowers	Khokhar
Q	<i>Scirtothrips dorsalis</i>	a thrips	04/22/99	New York	TUL	fresh khat	Sihota
A	<i>Ceroplastes rusci</i>	fig wax scale	04/03/99	Florida	SCL	<i>Ficus benjamina</i>	Khokhar
A	<i>Aonidiella orientalis</i>	Oriental scale	04/16/99	Hawaii	SCR	<i>Cocos nucifera</i>	Perry
Q	<i>Arhopalus</i> sp.	a longhorned beetle	04/01/99	Italy	SFO	steel forging/wood pallet	Wong
A	<i>Selenothrips rubrocinctus</i>	redbanded thrips	05/22/99	Hawaii	ALA	cut flowers	Grazzini
Q	<i>Technomyrmex albipes</i>	an ant	05/22/99	Hawaii	ALA	cut flowers	Grazzini
Q	<i>Dyscinetus morator</i>	a scarab beetle	05/05/99		ALA	<i>Manilkara zapota</i>	Hunt
A	<i>Howardia biclavata</i>	mining scale	05/04/99		ALA	<i>Manilkara zapota</i>	Devilla
Q	<i>Meghimatium striatum</i>	a slug	05/21/99	Hawaii	LAX	<i>Dracaena</i> sp.	Regis
B	<i>Diaphania nitidalis</i>	pickleworm	05/07/99	Mexico	LAX	fuzzy squash	Herrera

PLANT PATHOLOGY HIGHLIGHTS

Plum pox virus, also known as Sharka, has been discovered for the first time in North America. It was detected on peaches grown in an orchard in Adams County, Pennsylvania.

The virus infects stone fruit species, including almonds, apricots, peaches, and plums. Most strains do not affect cherries. Plum pox does not kill trees, however, it can make fruit unmarketable and drastically reduce yields. Ornamental peach and plum trees are an important reservoir of the infection.

It was first described in 1910 in Eastern Europe and has spread to most countries on the European continent. It has also been reported from Chile. No occurrences had been reported from outside the Euro-Mediterranean area until recently. The strain of plum pox virus found in Pennsylvania has been identified as the D strain, which is present in Western Europe.

The virus is characterized by round spots (pox) on fruit, leaves stems, and seeds. It is transmitted either by grafting, budding, or by aphid vectors. The D strain, present in Pennsylvania, is a less aggressive strain and is not known to be seed-transmissible.

Plum pox has been detected in the Latimore and Huntington Townships of Adams County. The infected area has been placed under quarantine, making it illegal to move stone fruit trees or budwood from the quarantine area. The area where the disease was found is a very concentrated apple and peach production area.

As of November, there were 18 positive sites within the two mile radius survey area. Four positive sites were detected in plum, apricot, and peach blocks. No additional growers are involved with the new finds. The number of growers whose orchards have been confirmed as being infected with Plum pox virus remains at four.

The following is taken from Dr. Vern Damsteegt's website, Research Plant Pathologist for ARS/USDA:

Diseases can be new and emerging or they can be threatening but not yet introduced or established in North America. Such is the case of Sharka, caused by plum pox potyvirus (PPV), one of the most serious diseases of *Prunus* (peach, apricot, nectarine, plum, sweet and sour cherry, almond, and wild and ornamental types). This disease has been kept out of North America by very strict quarantine regulations. In 1994, Nemeth estimated that 100 million trees were infected in Europe. Sharka is found throughout Europe, Egypt, Turkey, Syria, India, and most recently Chile (1992). It was verified in the Santiago region in 1994 and now considered widespread in Chile. It is caused by several strains of PPV which are transmitted by several aphid species in a non-persistent manner. It also is spread by propagative materials and possibly through seed.

http://www.scisoc.org/feature/New_Viruses/Top.htm